



{In Archive} SME diesel vapor sensor

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to:

John Wilson, Jack Hwang

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1 Attachment



SME sensor spec v2.2.pdf

Gentlemen:

Thanks for talking with me in Roanoke, VA about the SME vapor sensor. As you recall, I provided you with the spec sheet for the sensor, but I did not explain why we have the sensor.

The vapor sensor complements a permanent release detection and remediation system designed under the name *in-situ insurance*. It is a simple concept:

1. Install in-situ bioremediation (we use our own system, SME, Pat. 6,464,005) on a site (gas station)
2. Install vapor leak detection around the tanks, dispensers and product lines
3. When a leak is detected, the bioremediation system is automatically activated
4. Once the system is activated, our office and any other office (DEQ) is notified that the system has been activated
5. Operate until the release is remediated, then shut down the bioremediation system.

Our problem was that we could not find a vapor sensor that could detect diesel vapors. We looked everywhere.

The SME sensor was developed to pick up diesel vapors, which it does very easily. It also picks up any organic material we have tested, alcohols, motor oil, gasoline, etc. It was interesting to find that diesel vapors are easily found in the range of up to 2,000 ppm in cold weather. When we took the sensor to demonstrate to a sensor manufacturer, he claimed that diesel fuel would be detected at a lower concentration than gasoline, but that is not the case. The vapors off diesel are very distinct and can be quite high. We have not tested diesel vapors in warm climates, just in low temperature regimes, so I expect when we test in the summer, that the upper range of detectable diesel vapors will look much higher, upwards of 5k ppm.

The SME sensor was made to operate in harsh climatic conditions, in a temperature range of -40 to 85 degrees C. The sensor chamber is mirrorless, so there is not fogging or condensation of mirrors. The detectors (quad sensor) are Infrared. The quad sensor will detect any of four gases. We have tested it for oxygen, CO, CO2, methane and total hydrocarbons. We anticipate expanding the selection to include NOx, SOx, H2S and others. The spec sheet I gave you is for the suite of HC, methane, O2 and CO2. The accuracy and precision seems to be very high, although the O2 tends to drift as it does with other instruments. However, it does not fail at low temperatures.

This device may be a breakthrough in chemical sensing industry. The design is very simple, which complements what we believe will be a very modest price. We anticipate that the four-gas sensor will retail for about [REDACTED].

You can see a little more about our concepts through www.thevisiongroup.biz under both Ellis Environmental and IntelliSolve websites. I look forward to talking with you about this project

Mark Ellis

President

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cel [REDACTED]